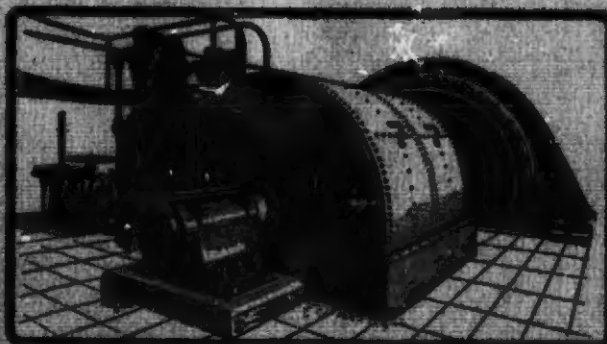


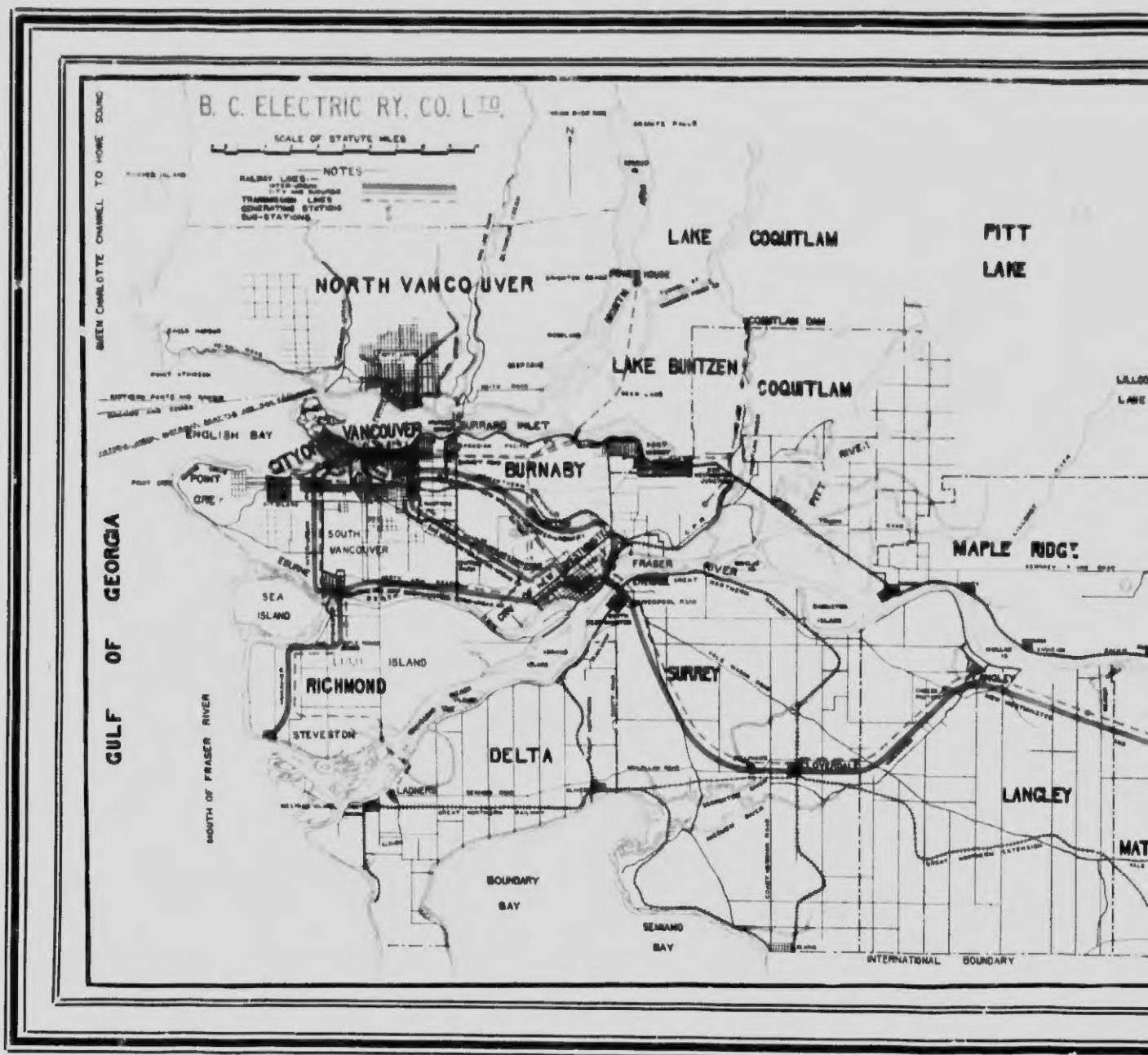
# BRITISH COLUMBIA ELECTRIC RAILWAY CO LTD

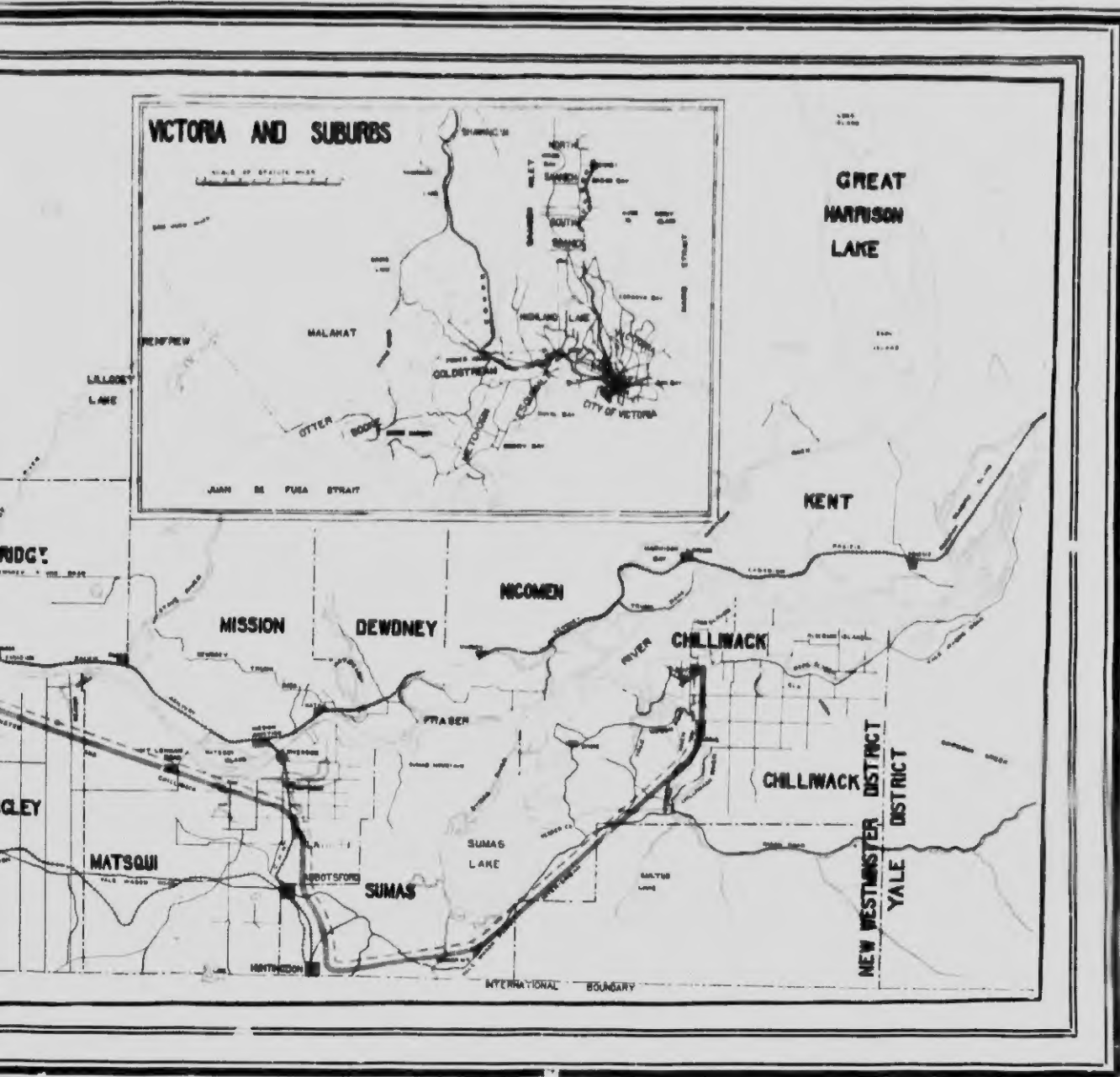


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SEPTEMBER 1910

[48] *P. inc. iclus.* 1 fold. map. 1 fold. plan.







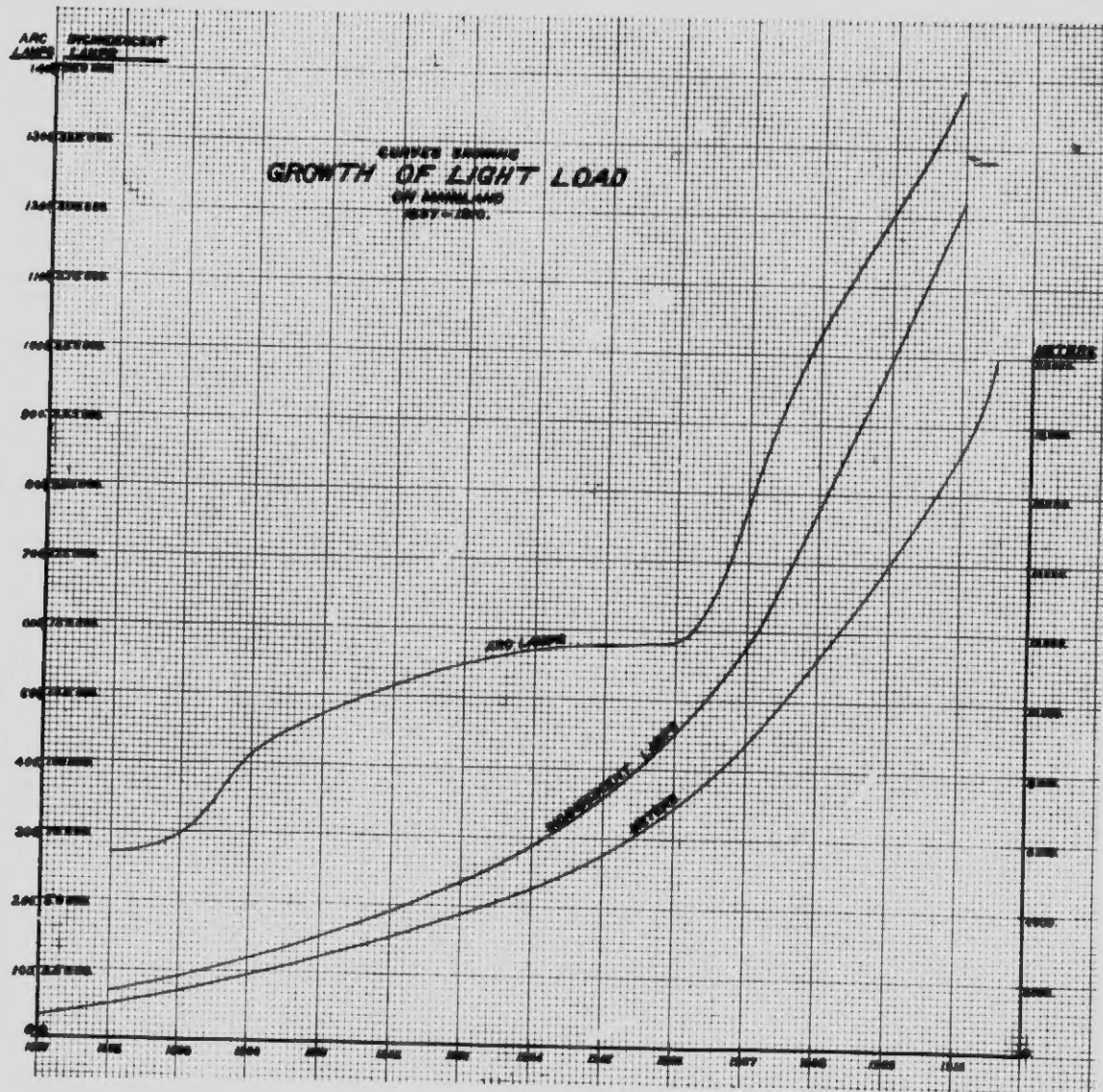


**A SHORT ACCOUNT**  
**OF THE**  
**PLANT AND OPERATIONS**  
**OF**  
**THE BRITISH COLUMBIA ELECTRIC RAILWAY**  
**COMPANY, LIMITED**  
**AND THE**  
**VANCOUVER POWER COMPANY**  
**AND THE**  
**VANCOUVER ISLAND POWER COMPANY**

**A SOUVENIR OF THE VISIT**  
**OF**  
**THE CANADIAN MANUFACTURERS' ASSOCIATION**

**WITH THE COMPLIMENTS OF**  
**THE COMPANIES**  
**VANCOUVER, B.C., SEPT 1910**

!





HYDRO-ELECTRIC GENERATING PLANT AT LAKE HUNTER





**T**HIS Corporation consists of the two allied Companies, the Vancouver Power Co., Ltd., and the British Columbia Electric Railway Co., Ltd. The Vancouver Power Co.

was formed as a subsidiary concern

in 1898 for the purpose of generating power by means of a hydro-electric plant at Lake Buntzen on the North Arm of the Burrard Inlet, an arm of the Gulf of Georgia. The power developed by this plant is utilized and distributed by the B. C. E. Ry. Co., and employed for lighting, power, and street and interurban railway work on the lower mainland of British Columbia, especially in and around the City of Vancouver, the commercial capital of B. C.; New Westminster, the old capital of the Mainland; North Vancouver, and the Fraser Valley, east of New Westminster.

In addition there are two other branches of the industry on Vancouver Island, viz.: The Vancouver Island Power Co. and the Victoria Branch of the B. C. E. Ry. Co., which operates in and around the City of Victoria, the Capital of the Province.

The history of the undertaking has been a marvelous record of almost unprecedented growth, unprecedented even in that most rapidly developing branch of Engineering—Electricity.

That such is the case may be judged by a brief survey of the following: In 1904 the street railway work of Vancouver City was handled by one 500 k.w. Rotary Converter, whilst to-day in the Vancouver substation alone there are one 1000 k.w., one 500 k.w. and two 2000 k.w. Rotaries, a total of 5500 k.w., and the Company has in addition substations at four other points, and one portable substation. The total capacity of its substations at present is over 7000 k.w., and new machines are being installed for over 2000 k.w., all of which will be carrying full load almost as soon as installed. Such is the phenomenal development in street railway work alone. In the other branches, Light and Power, the story is the same—one of great and

rapidly increasing growth. When it is considered that every part of the plant has been installed to take the place of out-of-date machinery in a short six years, it will be seen how great has been the development which has taken place in this "last outpost" of the Empire.

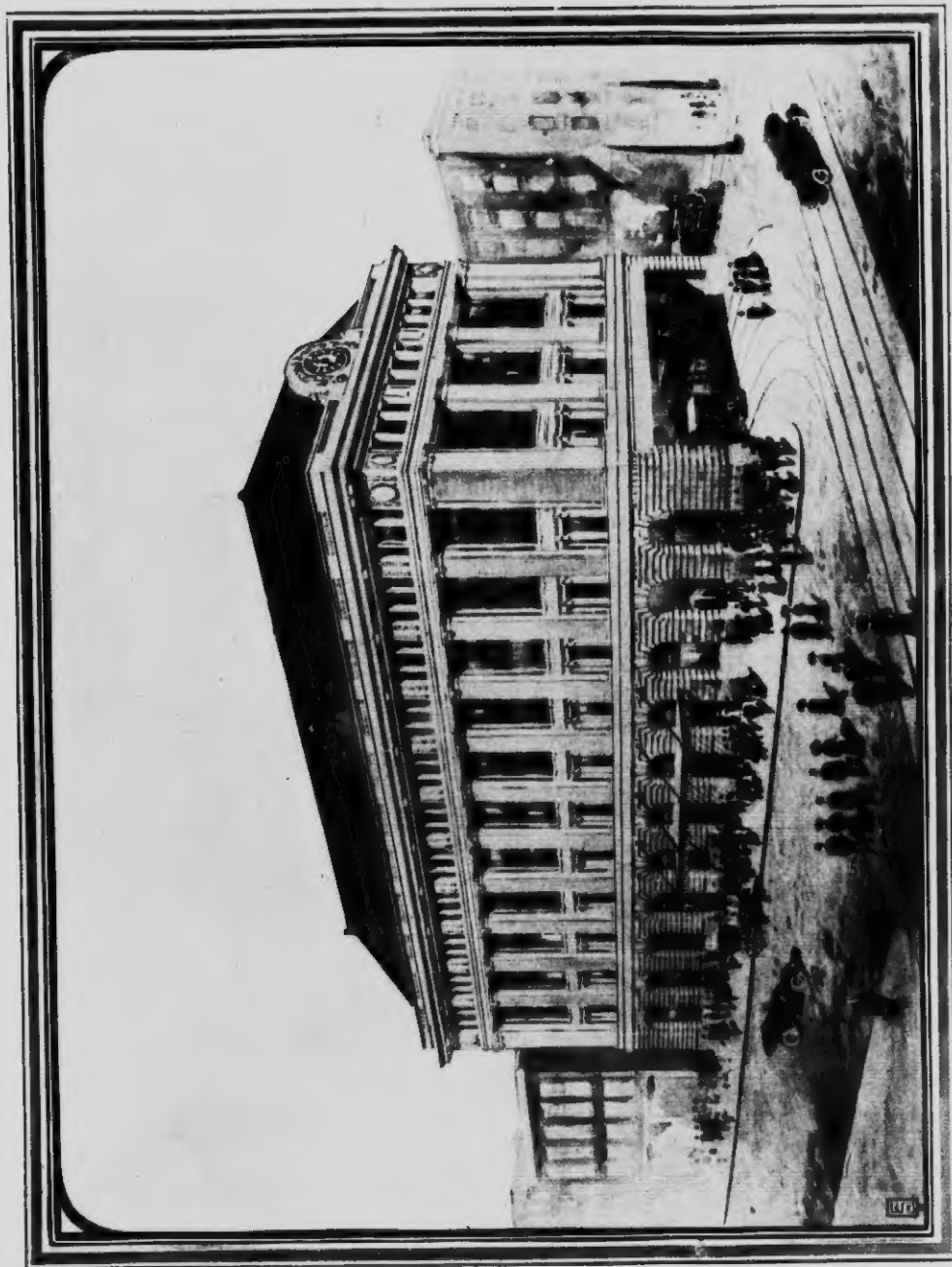
An auxiliary steam plant of two turbine units has recently been added for a stand-by and for emergency cases.

In the lighting branch the Company had in 1904 about 4,600 meters installed on the Lower Mainland whilst now it has over 20,000 meters. In the power load it had in 1904, 1200 h.p. of connected load, whilst in 1910 it has 11,000 h.p.

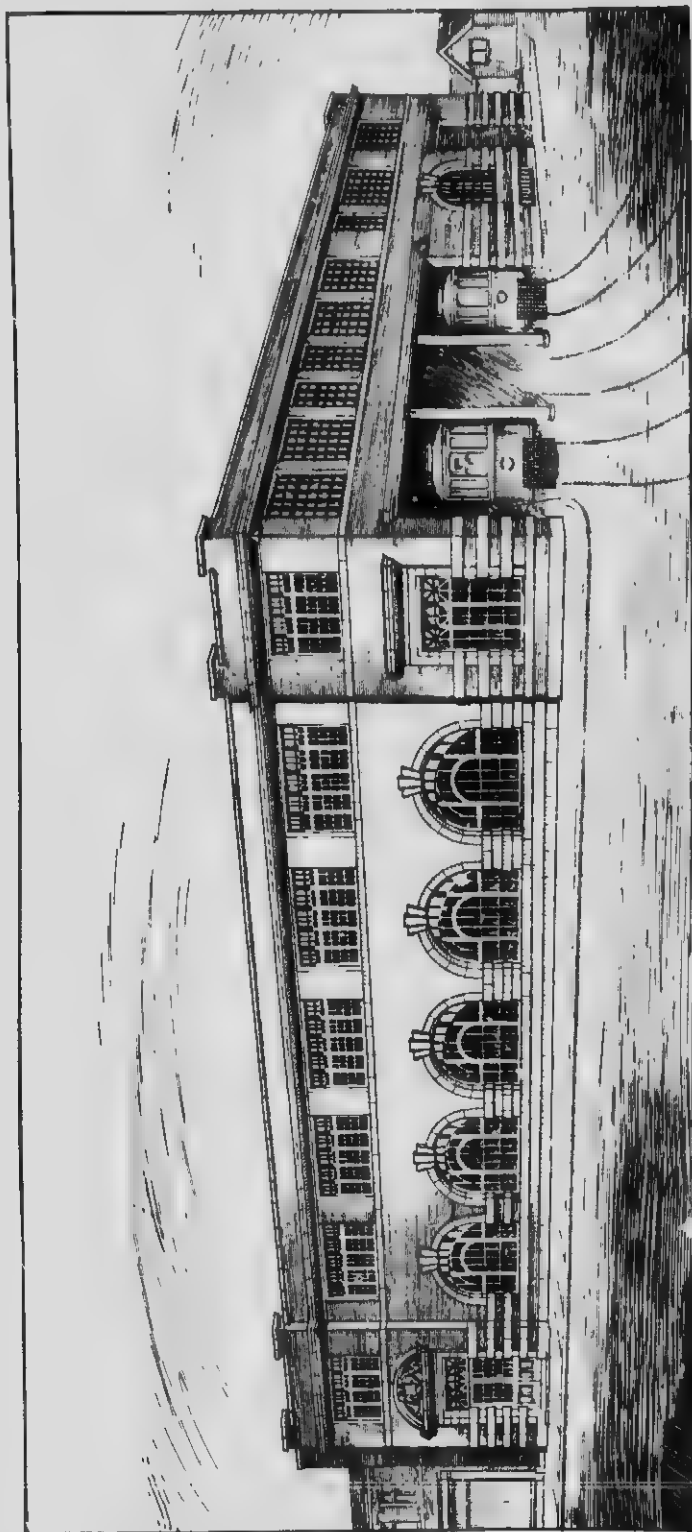
Four hundred feet above high tide is Lake Buntzen. It was named in honor of J. Buntzen, Esq., Director of the Company and for several years its General Manager. This lake of 500 acres is fed by the waters of the Eternal Snows, but would be inadequate to supply a plant of this magnitude. It has, therefore, been connected, by means of a tunnel, to Lake Coquitlam, altitude 432 ft., area 2300 acres, drainage area 100 sq. miles, whilst the rainfall amounts to 150 inches per year. This tunnel, 12,775 ft. in length, is the longest purely Hydro-Electric Tunnel in the world, and of itself constitutes a work of no mean engineering character.

A concrete dam 54 ft. high across the canyon (the outlet of Lake Buntzen) at once raises the water level of this lake, increases its storage capacity and contains the pipe intakes.

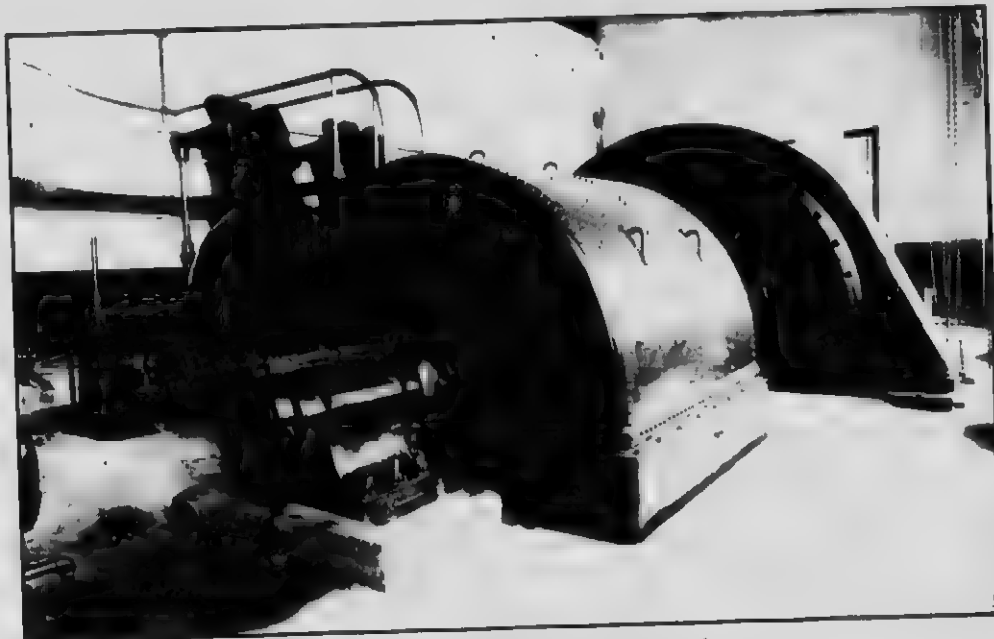
Like similar undertakings in other places, the history of the electrical industry in B. C. has been one of growth from small beginnings through various vicissitudes to a position of assured success, but in few places has this growth been so phenomenal or the success so marked as it has in B. C. The installation of electrical plant was inaugurated by the Vancouver Electric Illuminating Co., Ltd., in 1887, and in 1889 a second company, known as the Vancouver Street Railway Co., Ltd., was formed to operate by animal traction.



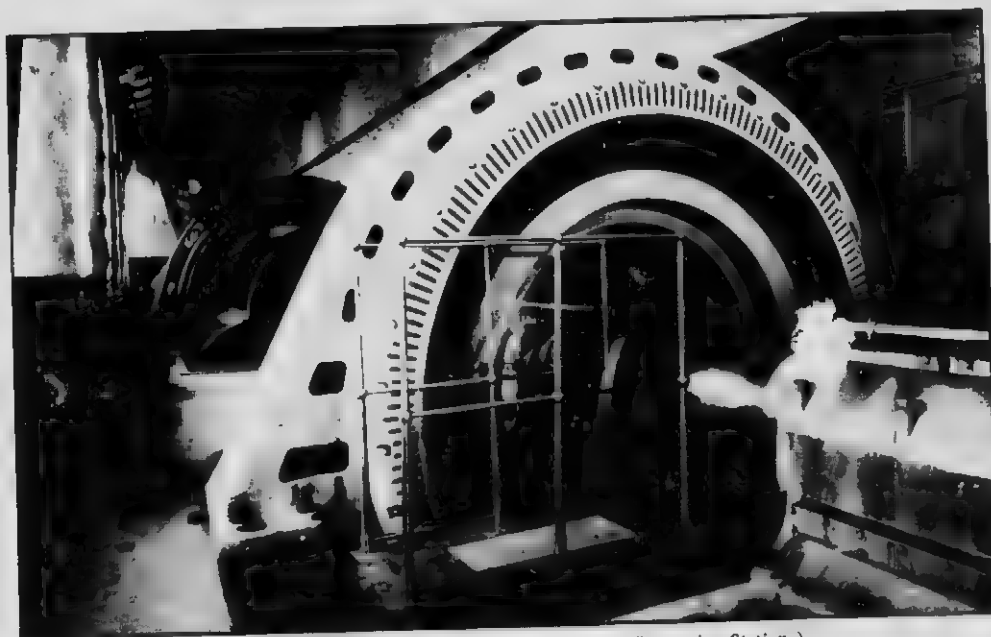
PROPOSED NEW GENERAL OFFICES AND INTERURBAN STATION AT VANCOUVER



PROPOSED NEW OFFICES AND INTERURBAN PASSENGER STATION AT NEW WESTMINSTER.



End view of one 10,500 h. p. unit, showing "Doble" wheel and governors.  
Lake Buntzen Generating Station.



One of the 10,500 h. p. Generators (Lake Buntzen Generating Station.)

*Continued from Page 4.*

In the following year (1890) the two companies were merged and the lines electrically operated. In 1890 there was also commenced the New Westminster interurban system and the Victoria (Vancouver Island) system. These were again merged into one Company, known as the Consolidated Railway Co., Ltd., and as such were operated until 1897, when the British Columbia Electric Railway Co., Ltd., was formed and purchased the amalgamated undertakings, which have been run continuously by this Company ever since. In 1905 the Hydro-Electric plant at Lake Buntzen was installed, and from that time to the present all power has been derived from this source.

The site for the Generating Station has been blasted out of the solid rocks and cliffs, and the buildings were erected from the granite so quarried. The within pictures of this plant and surroundings show the transformer houses, step-up stations and operators' dwellings. Immediately behind and above the Power House an electric elevator in a concrete shaft serves as a means of quick conveyance from one to the other. To the right of the Power House is a concrete warehouse and wharf built on concrete piers. Cars loaded with the heaviest machinery and freight are landed on this wharf over a drop apron, at any stage of the tide.

The installation in the Power House at present consists of six units, totalling 33,000 h.p. Four of the units are 3000 h.p. each, the other two 10,500 h.p. each.

Two pole lines 80 feet apart carry four distinct sets of high-tension transmission wires over a private right of way to the north shore of Burrard Inlet, opposite Barnet. Between two wooden towers on this north shore and two steel towers at Barnet on the south shore, a span of over 3000 feet, these four high-tension sets of lines cross the salt water, giving a headway of 132 feet for clearance of the masts of sailing vessels. From

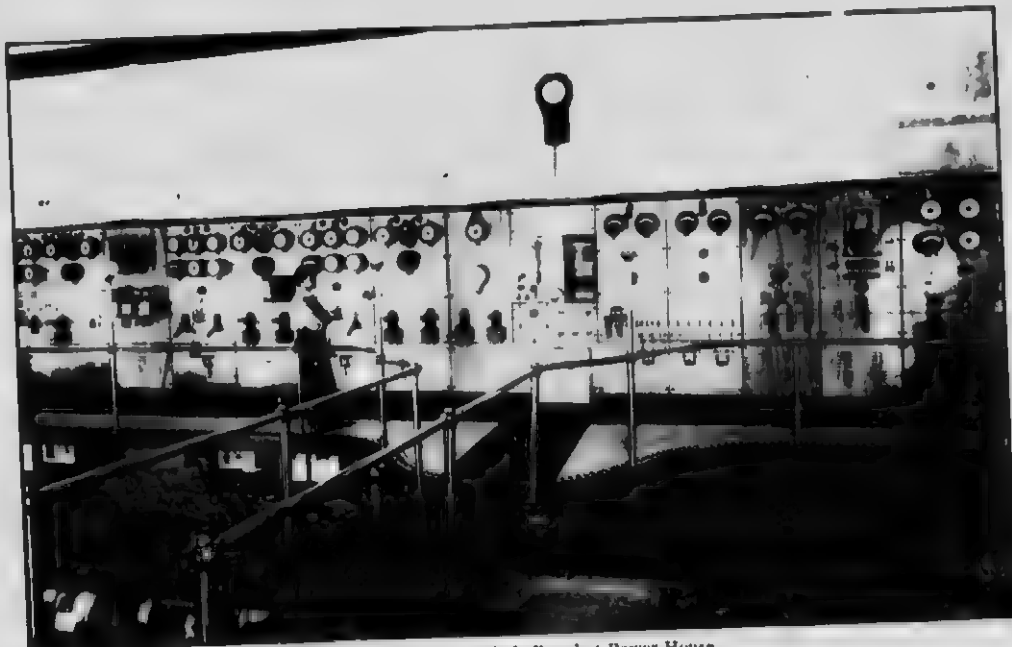
Barnet almost straight west one pole line, with two sets of transmission wires, continues to Vancouver City sub-station; the other, almost straight south to Burnaby sub-station. The Vancouver sub-station and the Burnaby sub-station are interconnected along the Company's private right of way, the Westminster-Vancouver Interurban Railway, by two independent sets of transmission wires, so that in case of trouble on any one line an uninterrupted service may still be maintained. From Burnaby sub-station two sets of transmission wires run out to New Westminster City sub-station and five new sub-stations about twelve miles apart on the Fraser Valley Branch to the City of Chilliwack, 64 miles from New Westminster.

From Barnet a further high-tension transmission line leads directly east, dividing into two branches, one supplying Lake Coquitlam and the other the Asylum Farm sub-station, a Government institution, and New Westminster Junction.

From the Vancouver sub-station two sets of transmission lines lead out towards the city of North Vancouver and its surrounding district, crossing the harbor at the Second Narrows on a set of high masts 190 feet above tide water. The receiving sub-station for this line is located in the east end of this City; the other line follows the right of way of the Lulu Island Railway to the sub-station on Lulu Island. A new and additional sub-station is now being erected along this line at Shaughnessey Heights, in Point Grey District, to take care of this rapidly growing suburb.

The Vancouver City sub-station naturally is the largest and most interesting. It supplies the business, residence and street lighting of the city, the suburbs of South Vancouver and Point Grey, the power for numerous industrial motors in these districts, and the city's extensive street railway system. Two six-phase 60-cycle Rotaries, recently added to its equipment, are particularly interesting to the electrical engineer as being the largest of their kind in the world.





One End of Main Switch Board at Power House  
(Lake Buntzen Generating Station.)



Rear View of Generating Plant showing Transformer House.



One of the large Valves being placed in position for 10,500 H.P. Unit at Lake Buntzen.

*Continued from Page 8.*

Next to the Vancouver sub-station, the most important sub-station on the system is located at Burnaby, about nine miles from Vancouver, on the Vancouver-Westminster interurban line. It is the switching point for Westminster City-Vancouver, Westminster Interurban and Fraser Valley branches. Two 10,000-volt transmission lines distribute power over considerable distances to large sawmills on Burnaby Lake to the north and the Carbolineum Works on the Fraser River to the

south.

The Lulu Island sub-station apparatus operates the Vancouver and Lulu Island Railway and the Eburne-Westminster line, and also lights the residences of the farmers along and near these railways, the town of Steveston at the mouth of the Fraser, the town of Ladner on the south side of the Fraser River, the motors in the salmon canneries along the river bank, and the stables, barns and dairy houses of the farmers in this district.



Seven Foot Wooden Stave Pipe at Commencement of Penstock



Concrete Compartments and Safety Gates on High Tension Side, also Electrolytic Arresters.



Exterior view of Auxiliary Steam Plant, showing large Concrete Stack  
(Highest in Canada.)

*Continued from Page 10.*

A portable sub-station, mounted on trucks for hauling from place to place, is found very useful and convenient to assist in the moving of large crowds to the various parks both in Vancouver and Westminster, and to the exhibition grounds in both cities.

The electric railway system of the Company, consisting of the Mainland and the Vancouver Island (Victoria) systems, is fully shown on the accompanying maps. It comprises 200 miles of track on the mainland and 25 miles in Victoria and its suburbs.

All along the various Interurban Lines the Company has extended its lighting and power circuits. These are greatly appreciated, and exceedingly well patronized by the residents and settlers of the districts traversed, giving them practically all city conveniences in their suburban homes, and even on the farm. Small electric motors for water pumping and other household

duties are used quite extensively from these lines. For the improvement of the suburban roads, rock crusher motors are operated for various municipalities.

Along the banks of the Fraser River from Point Grey (Eburne), through South Vancouver to Burnaby, a number of industries and factories have by this means been able to obtain a cheap and reliable power, available at all hours of the day, as well as a good and frequent railway service, with siding facilities for the handling of freight in carload lots.

Into the timbered sections branch power lines have been built for the operation of sawmills and shingle mills, obviating the hauling of the unwieldy and ponderous logs, at the same time clearing up these districts for the settler and his plow. A number of the illustrations show plants of this kind in the timber between Vancouver and Westminster and near North Vancouver. All of these, when first connected and started



Interior view of Auxiliary Steam Plant, two Steam Turbo Generator Units  
2,000 Kilowatt each.

*Continued from Page 12.*

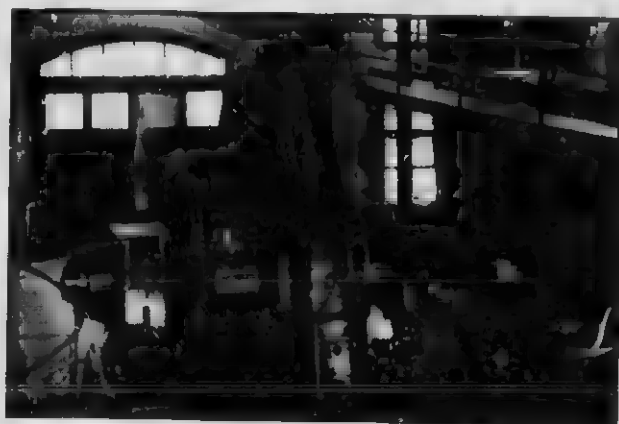
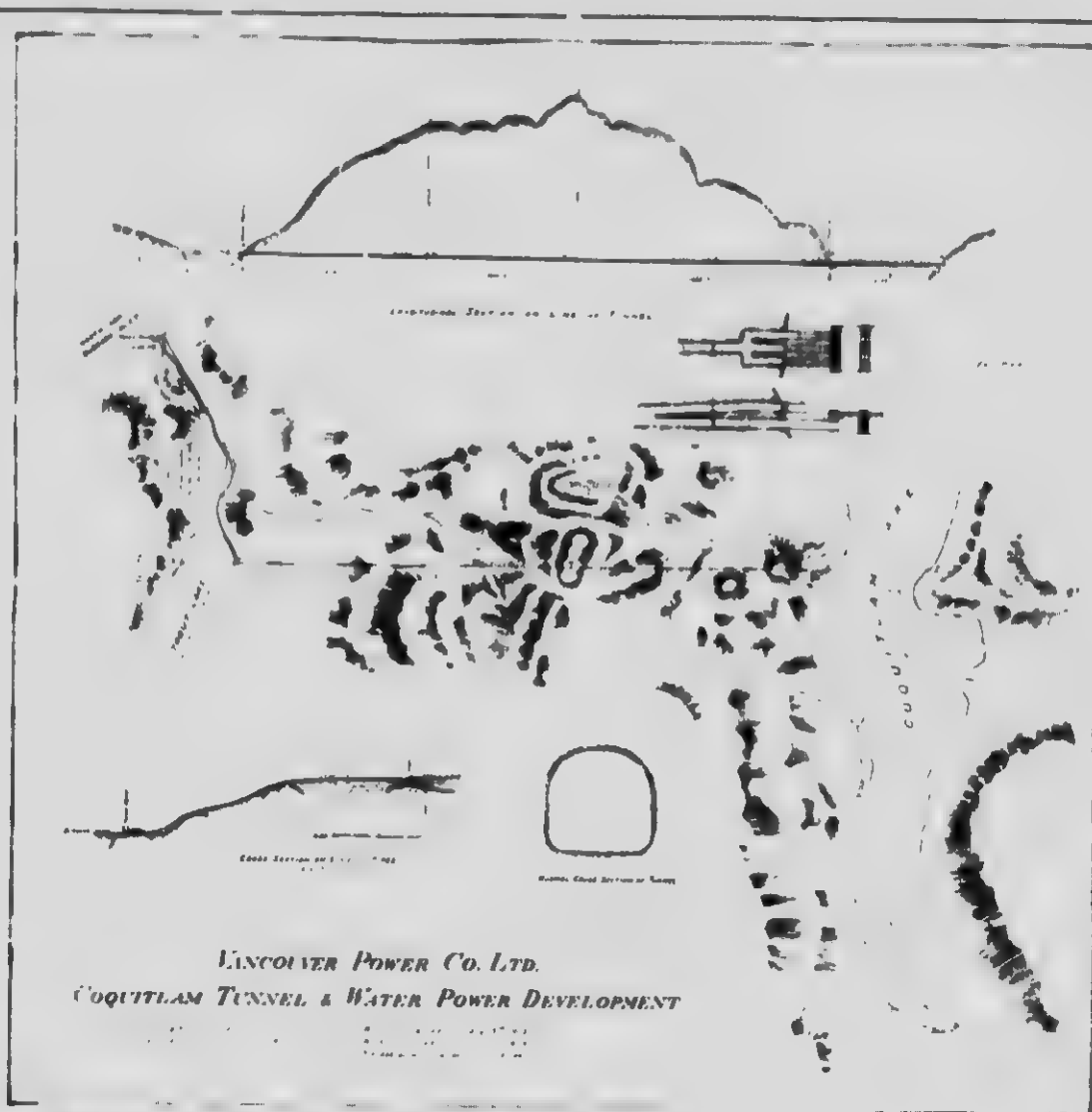
up, were closely surrounded by timber, which may now be noticed receding in the distance before the onslaught of electrically-driven saws and planers. The lumber from these mills is again worked up in the numerous electrically-operated woodworking establishments, box factories, shipbuilding yards, etc., in the three cities. The car-building shops of the B. C. E. R. Co., Ltd., in New Westminster, is a good example of the use of the electric power.

Since the extension of the Company's power circuit to New Westminster and through its manufacturing and wholesale section, a number of very important industries have adopted the electric drive, among others a large can factory, an ice and cold storage plant, several machine and iron works, butcher shops and their cooling plants, bakeries, plumbing shops, printers, etc. The swings of the two bridges spanning the Fraser at New Westminster City are also operated by the cur-

rent from this Company's lines. All along the river front of this city power lines are now available for any industries intending to locate there. These same power lines are now being extended along the Fraser Valley line to Chilliwack, 64 miles in length, and have already reached Huntingdon, a distance of about 43 miles from New Westminster, serving towns and villages, farmers and sawmills, en route. On this line particularly the mill is taken to the timber instead of the timber to the mill.

Many and varied are the uses to which the electric current supplied by the Company is put. Its flexibility lends itself to almost any undertaking. An attempt, in a small way, is made to illustrate this with the assistance of the camera, and the photographic reproductions herein may be sufficiently interesting to be kept as a memento of the "Farthest West" and one of the institutions which has done its full share towards bringing about the highly prosperous conditions which exist in British Columbia to-day.





One of the large six-phase Rotaries in Vancouver Sub Station



Exterior view of Westminster Avenue Sub-Station, showing High Voltage Wires



Interior view of portion of Westminster Avenue Sub-Station.



Meter Testing and Repairing Room, Vancouver.



Type of Suburban Sub-Station for Light, Power and Interurban Railway Work.



Car Repair Shops, Westminister Avenue.



Feed-Cutting Plant on Farm Near Kburne.



Private Pumping Plant for Suburban Residence.

High Tension Transmission Lines across Second Narrows,  
Burrard Inlet, supplying North Vancouver.



Transmission Lines supplying light  
and power to the Lower Fraser Dis-  
trict, including Ladner and the  
Delta.

Towers Nos. 1 and 2 across the Lower  
Fraser River on the Ladner-Delta  
transmission line.





Inspection Party at Lake Coquitlam Tunnel Portal.

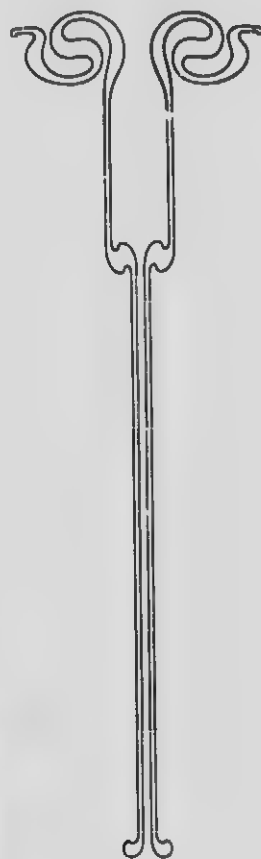
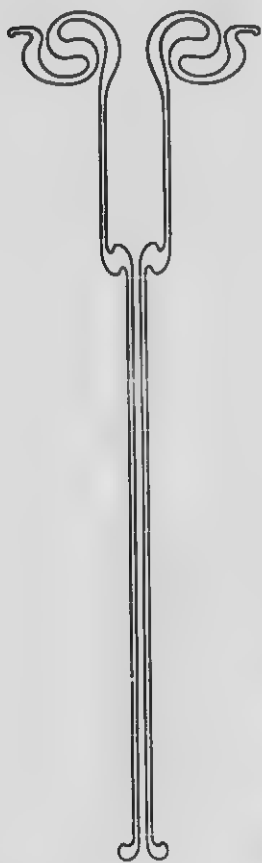


Type of City Car built in the Company's own shops at New Westminster.



Type of Suburban Car built in the Company's own shops New Westminster.





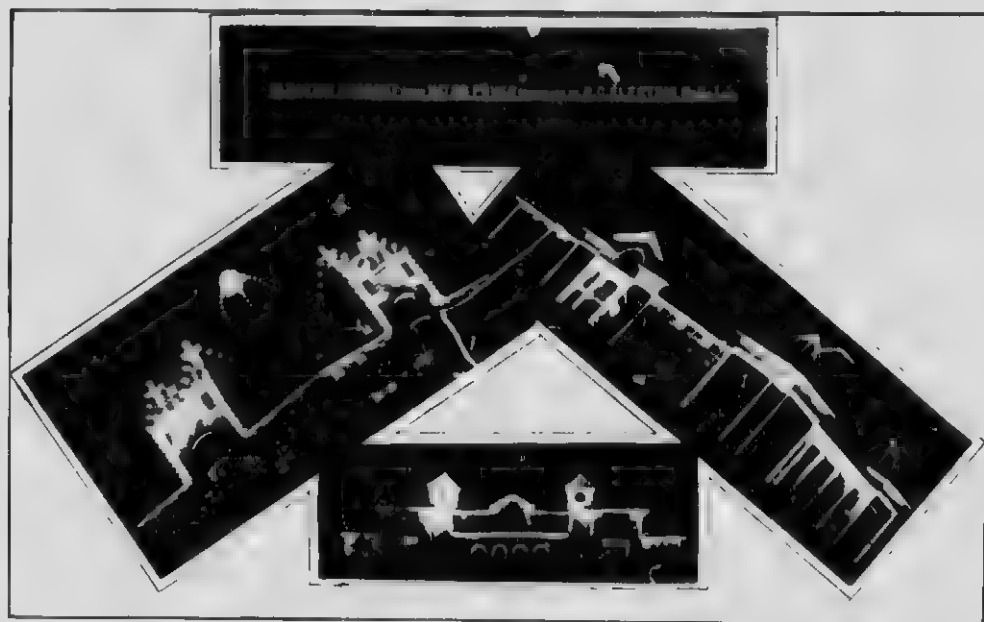
High Tension Transmission Towers at Barnet.



Freight and Passenger Electric Locomotive.



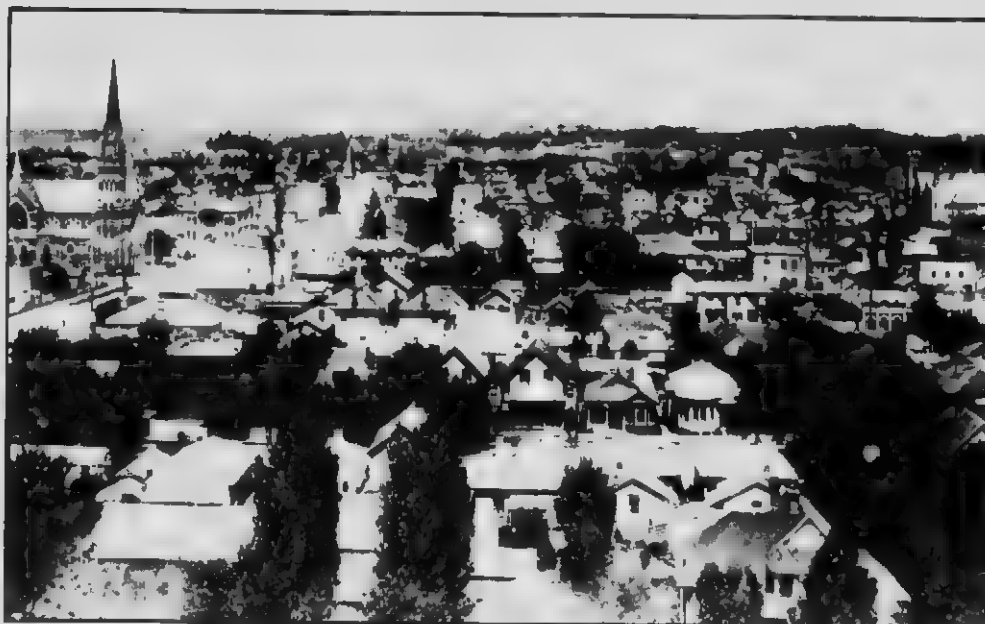
Handling Big Crowds at Vancouver



Illuminations of a few of New Westminster's Exhibition Buildings.



View of a portion of Vancouver's First Exhibition, August 1910.—The Industrial Building.



Panoramic View of Victoria City



Provincial Parliament Buildings, Victoria.



Inner Harbour, Victoria.



Outer Harbour, Victoria, served by the "Outer Wharf" Car Line



Two Scenes in Beacon Hill Park, Victoria, served by the Beacon Hill Line.





PANORAMA OF THE BUSINESS SECTION  
FROM THE TOP OF THE



A portion of the Convention Delegates of the North West Light and Power Association  
meeting on board the "S.S. Queen," Vancouver Harbour, Aug. 29, 1910.



BUSINESS SECTION AND HARBOUR OF VANCOUVER CITY  
THE TOP OF THE COMPANY'S STACK



The Fresh Water Harbour of the City of New Westminster : Fraser Bridge in the distance, carrying High Tension Transmission Line, supplying Fraser Valley Branch.



Terminus of the "Oak Bay" Car Line, with Mt. Baker in the distance.



Bridge in "Gorge Park," the Company's property between Victoria and Esquimalt.



Boating Scene at Gorge Park.



Japanese Tea Gardens at Gorge Park

## Offices and Plant at Victoria



Offices of the Victoria Branch



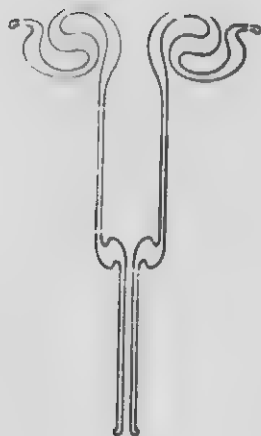
Type of Observation Cars in use at Vancouver and Victoria.



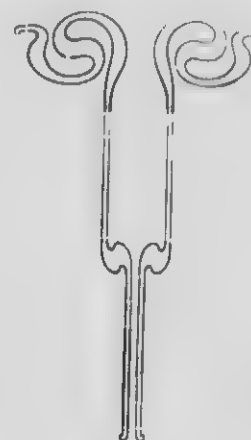
City Sub Station at Victoria



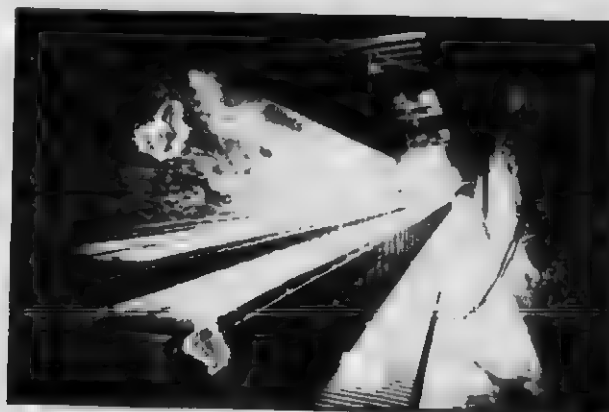
Exterior of Victoria Car Barn - Victoria



Hydro Electric Power House at Goldstream  
Supplying Power to Victoria



Interior of Car Barn, Victoria



"Tudor" Storage Battery Room, Victoria



A portion of Queen's Park, New Westminster, with Exhibition Building.



A portion of the Exhibition Grounds, Queen's Park, New Westminster, with Electric Fountain





View of a portion of New Westminster City Water Front from the Fraser River



Government Bridge across Fraser River, carrying High Tension Transmission Line and Rails for Fraser Valley Branch.

# CAR-BUILDING PLANT OF THE COMPANY

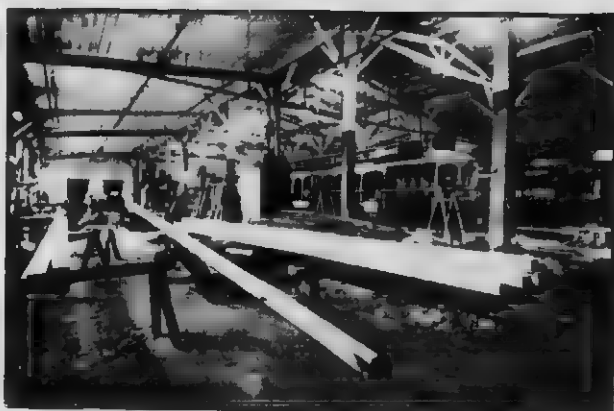
AT NEW WESTMINSTER



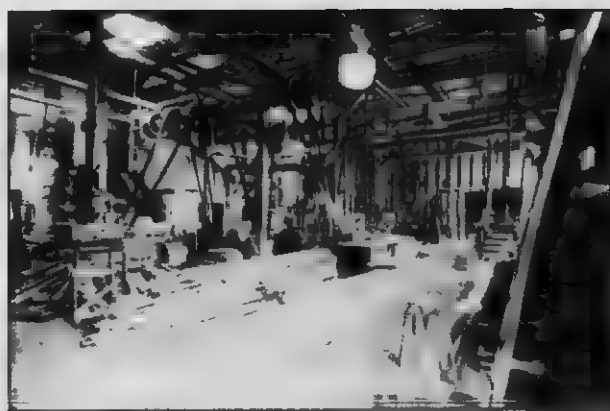
Exterior View of Erecting Shop



Rear General View of Plant



Interior View of Factory



Interior View of Erecting Plant

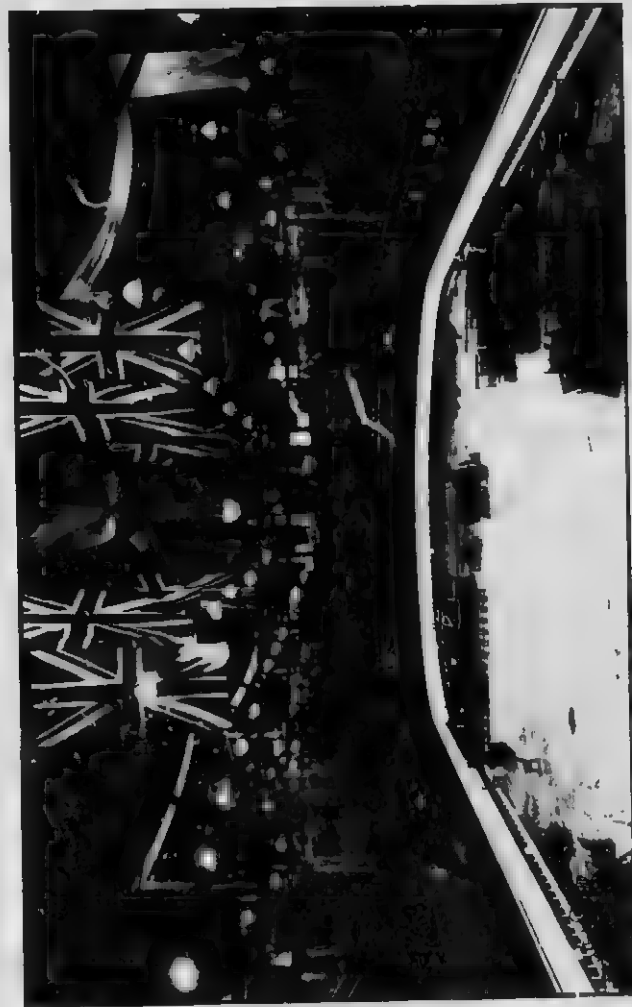
## Applications of Electric Power



Lumber Mills at the edge of Virgin Forest operated by one 125, one 15 and one 10 H.P. Motors.



Mill under construction now operated by one 200 H.P. and one 100 H.P. Motor.



HORSE SHOW BUILDING, VANCOUVER

Example of Osram Floodlight (Tungsten Lighting).

Photo taken by this illumination. Note absence of shadows on floor

## Applications of Electric Power

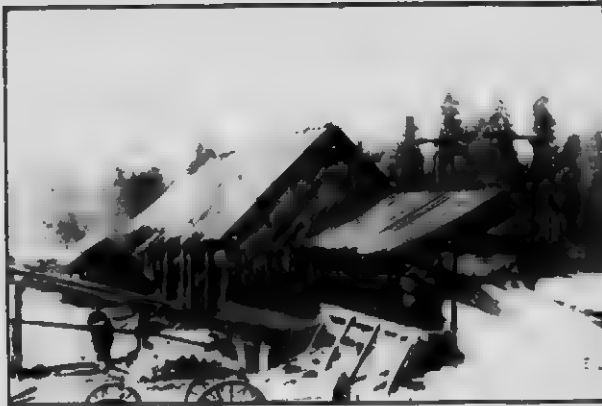


Lumber Mill in Forest near Vancouver, 125 Horse Power



Interior View of Same

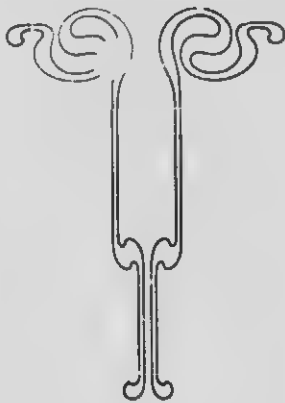
## Applications of Electric Power



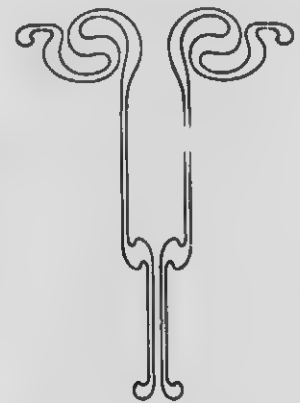
Shingle Cutting Mill in Forest 125 H.P. Motor



Cedar Lumber Mill in Forest—85 H.P. Motor



Pole Line Construction in Forest—Living Tree.



Exterior View of Lumber Mill in Forest.  
One 85 H.P. and one 25 H.P. Motor



Interior View of Same.  
Showing 85 H.P. direct connected to Saw Shaft.

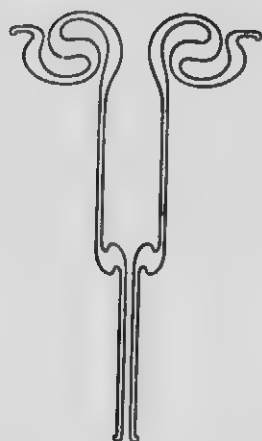
## Applications of Electric Power



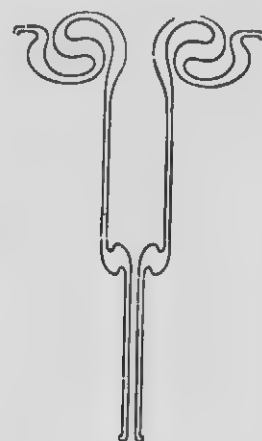
Suburban Sash and Door Factory



Shipyard at North Vancouver 65 Horse Power



One of the Rooms in Shipyard



Lumber Mill close to Standing Timber



Motor Room of same Establishment

Entirely Electrically Driven—North Vancouver.



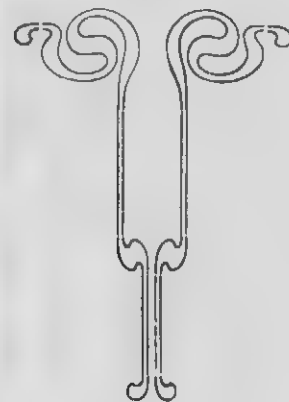
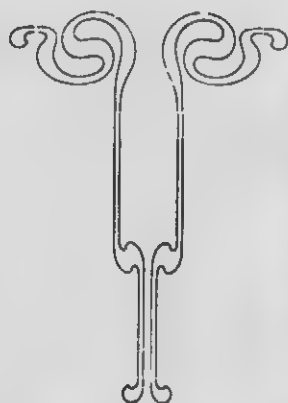
## Applications of Electric Power



Exterior View, Pullman House Builders  
200 H.P. in use, more to be installed



Interior of Factory  
with individually driven machines



Transformer House for C. P. R. Shops—200 Horse Power



Wheel House, C. P. R. Shops

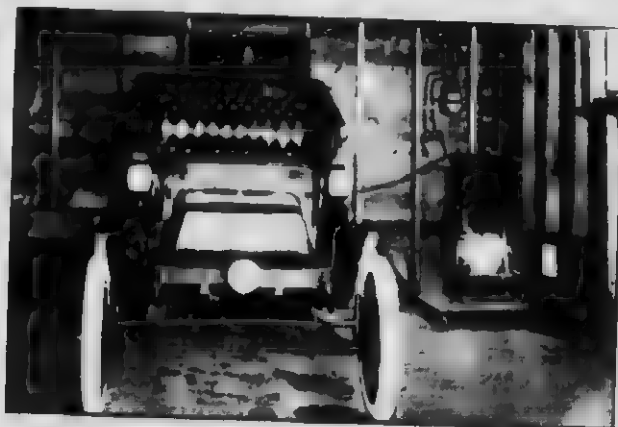


Compressor Plant for C. P. R. Shops

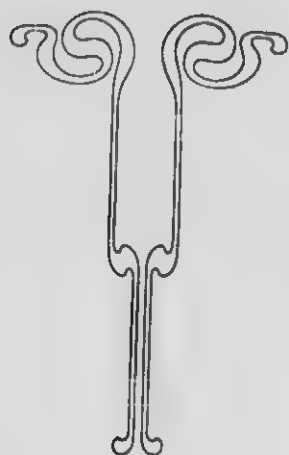
## Applications of Electric Power



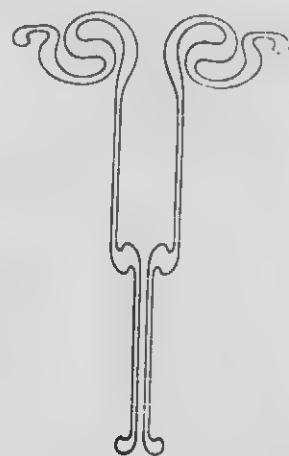
Public Charging Station for Electric Autos.



Private Rectifier set for Charging Electric Vehicle



Transformers Supplying 225 Horse Power  
Vancouver Engineering Works.



Steel Foundry with Bessemer Converter

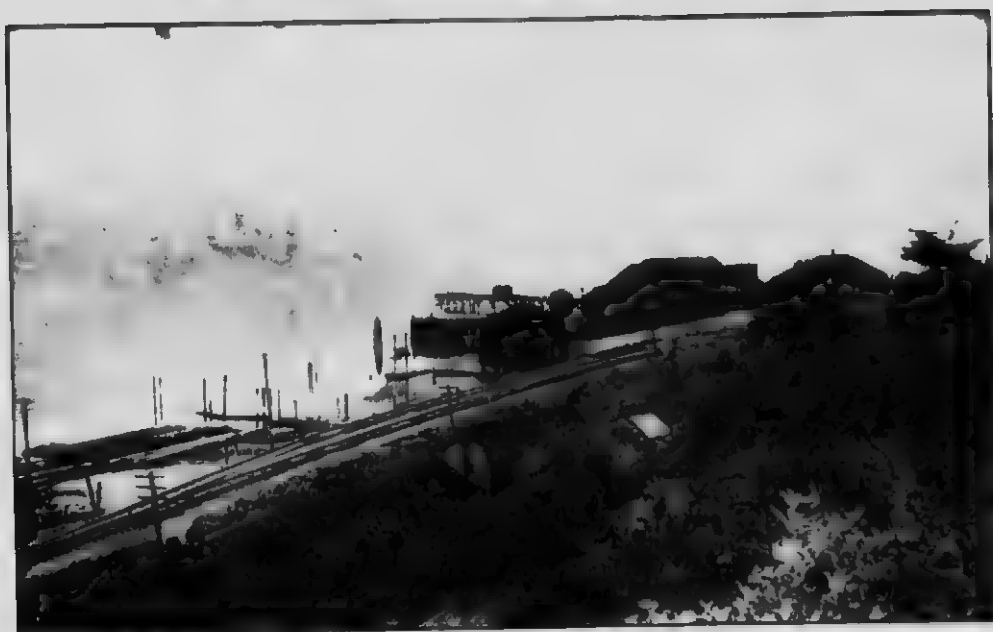


Blowers for Bessemer Converter, Motor driven

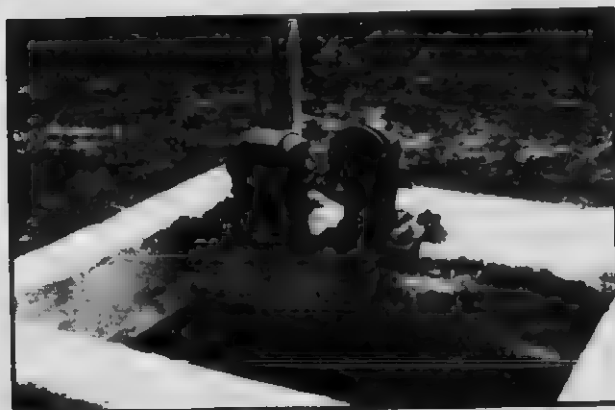
## Applications of Electric Power



Electric Turbine Works



Chemical Works, 148 Horse Power



Private Water Plant in Suburbs

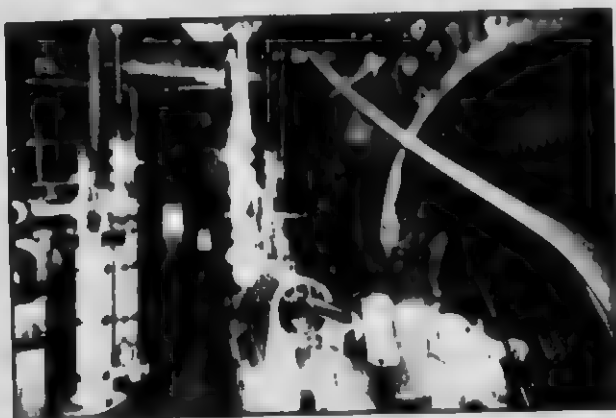
## Applications of Electric Power



Two Views of Rock Crusher on Mountain Side at Deep Cove  
North Arm, Burrard Inlet  
200 Horse Power



## Applications of Electric Power



Refrigerator Plant, New Westminster



Cutting Press in Printing House



Automatic Can Factory, New Westminster



Sash and Door Factory, New Westminster



Over 100 Independently Driven Sewing Machines  
in Clothing Factory

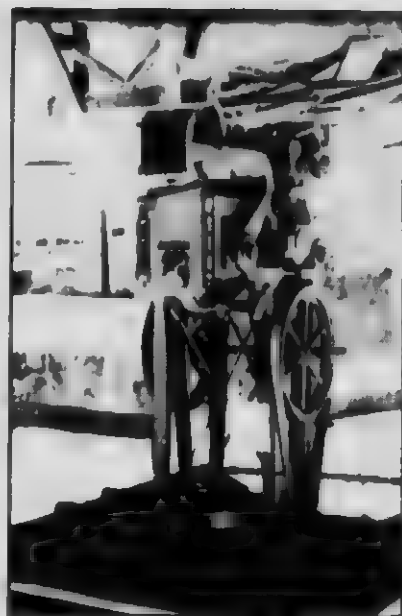
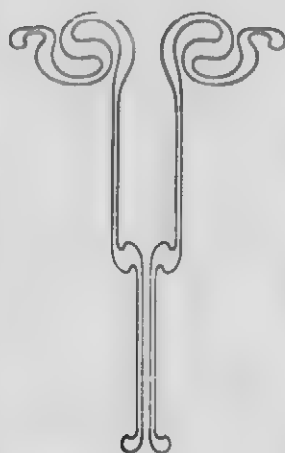


Electric Cloth Cutter, 5 H.P.  
Clothing Factory

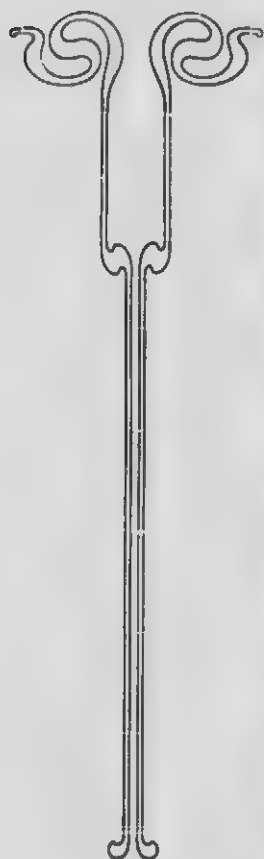
## Applications of Electric Power



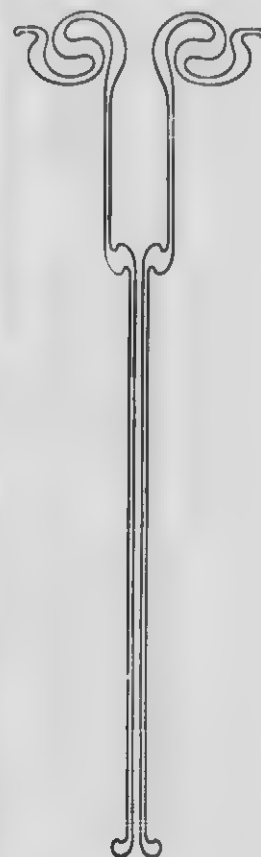
City Pumps, Victoria  
15 H P



Double Acting Shears  
Esquimaux Marine Railway



Rice Mill, 15 Horse Power



Angular Saw, Marine Railway, 40 Horse Power

## Applications of Electric Power



Colonist Newspaper 30 H.P., Victoria



Sash and Door Factory 30 H.P. and 40 H. P.



Private Pumping Plant, University School—Small 2 H.P. Motor



Grain Warehouse Elevator, 7.5 H.P.



Sand and Gravel Elevator, 25 H.P



Automobile and Wagon 5 H.P. Elevator





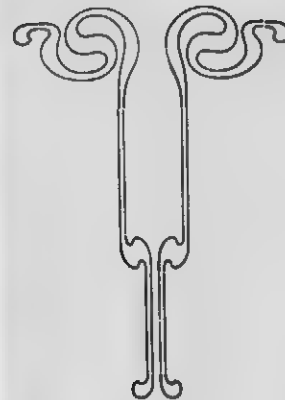
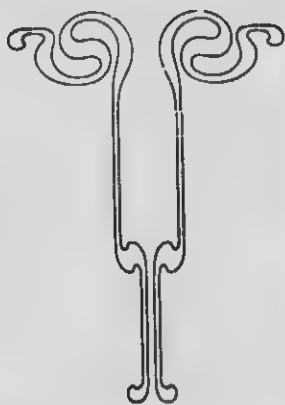
Osram (Tungsten) Lamp. Street and Ornamental Lighting.  
English Bay Pier and Promenade. Stanley Park in background, Vancouver



City Branch and Sales Room, 781 Granville St., Vancouver.  
Window Display of Hot-point Electric Irons, Tungsten Lamp Illumination.

—EXAMPLES OF  
OSRAM (TUNGSTEN) LAMP

Illumination of Store Windows at Vancouver, Showing High Standard Maintained from Heart of City to Outlying Districts.





Two Scenes on Capilano River, served by Car Line Extension, North Vancouver



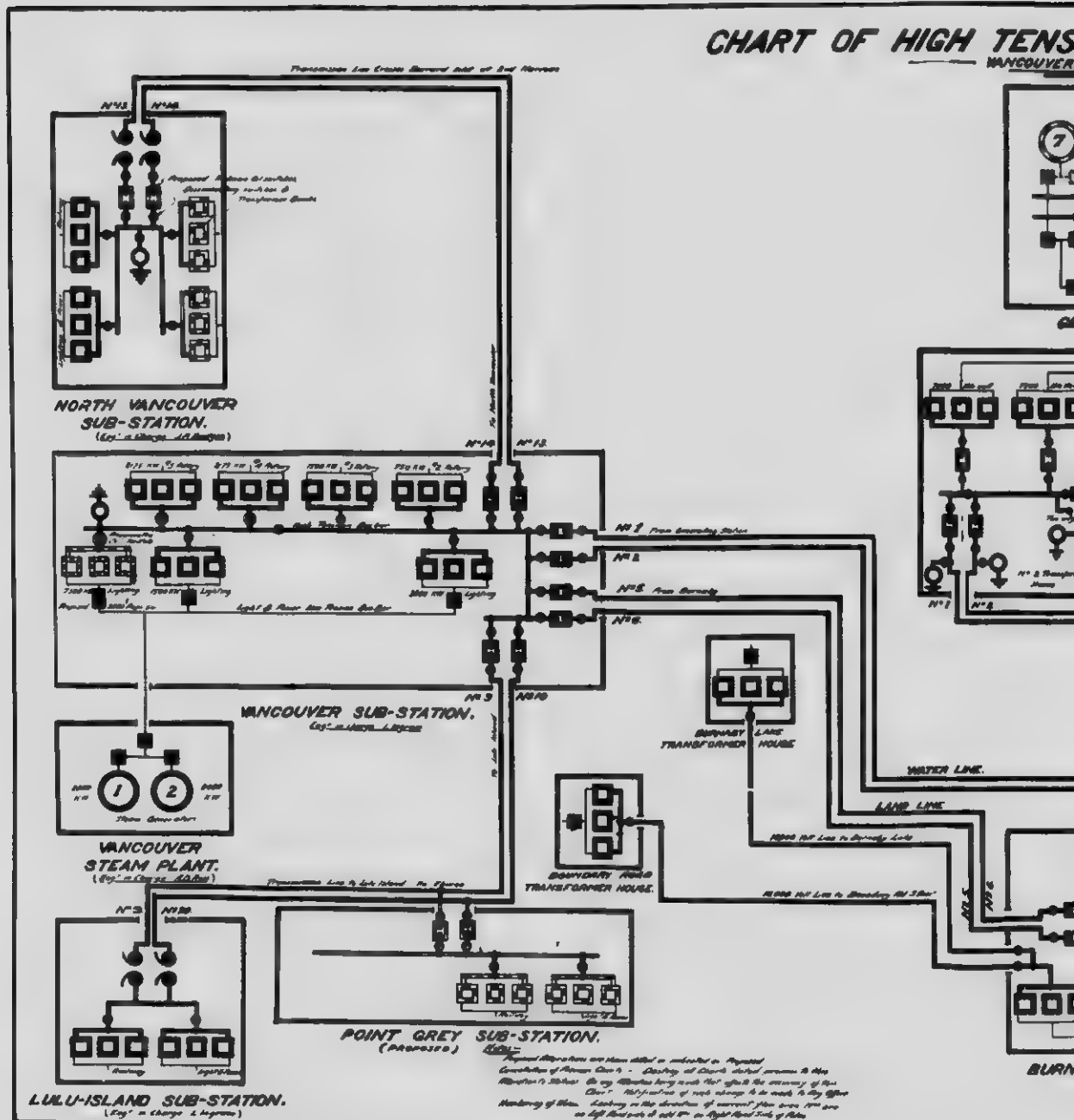


NIGHT SCENE—HASTINGS STREET  
VANCOUVER

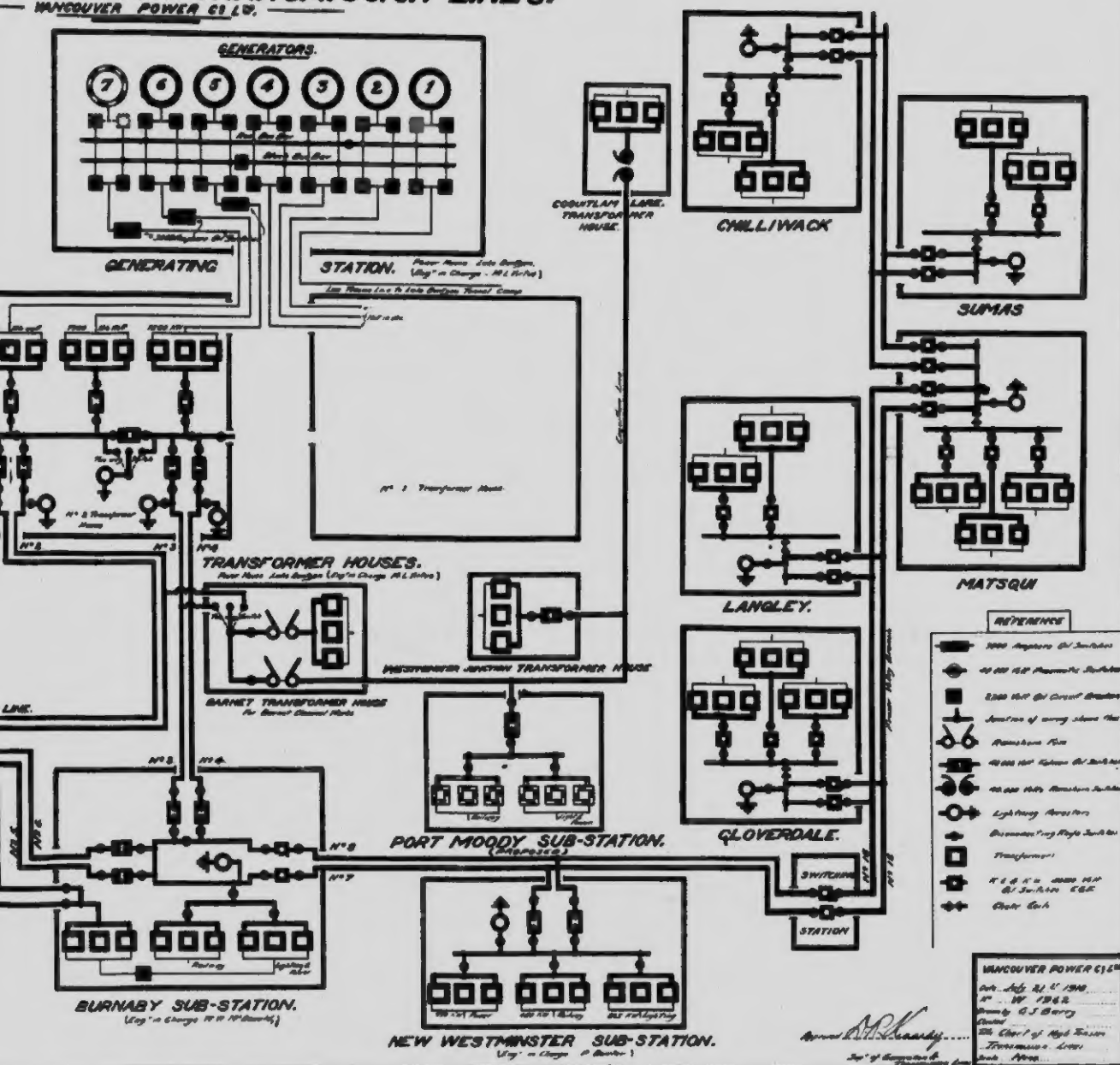


# CHART OF HIGH TENS

VANCOUVER



## WAKOVER POWER CIL









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